

REMARKS

Claims 31 and 36 are objected to for containing typographical errors. Claims 31 and 36 have been amended to correct these informalities. Therefore, withdrawal of this objection is respectfully requested.

Claims 31-34, 37, and 30 stand rejected under 35 U.S.C. § 102(a) as being anticipated by Ovshinsky, US Reissued Patent No. 37,259 E ("Ovshinsky"). This rejection is respectfully traversed.

Amended independent claim 31 recites a "non-volatile resistance variable device" comprising, *inter alia*, "a resistance variable chalcogenide comprising material having metal ions diffused therein received operatively adjacent the first electrode, the chalcogenide material comprising A_xB_y " and "the second electrode and resistance variable chalcogenide comprising material operatively connecting at an interface, the chalcogenide comprising material having a first region which is displaced from the interface at least by a chalcogenide material interface region having a higher content of "A" than the first region." Ovshinsky fails to disclose all limitations of amended independently claim 31. Specifically, Ovshinsky fails to disclose "the second electrode and resistance variable chalcogenide comprising material operatively connecting at an interface, the chalcogenide comprising material having a first region which is displaced from the interface at least by a chalcogenide material interface region having a higher content of "A" than the first region."

Ovshinsky discloses that the composition of Ovshinsky's memory material can be modified by creating a compositional inhomogeneity to reduce drift. Specifically, Ovshinsky discloses that the memory material can have a compositional gradient, have discrete layers of differing compositions, or a combination thereof. Each

of Ovshinsky's techniques is intended to result in substantially reduced resistance value drift. Ovshinsky at col. 12, line 20 to col. 13, line 17. Ovshinsky, however, does not disclose "the chalcogenide comprising material having a first region which is displaced from the interface at least by a chalcogenide material interface region having a higher content of "A" than the first region," as recited by amended independent claim 31. Ovshinsky is silent about the composition of Ovshinsky's memory material at an interface with a second electrode. For at least these reasons, withdrawal of this rejection is respectfully requested.

Claims 34, 36, 38, and 40-41 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Ovshinsky. This rejection is respectfully traversed.

As discussed above, Ovshinsky fails to disclose, teach or suggest all limitations of amended independent claim 31. Therefore, for at least the reasons discussed above this rejection should be withdrawn.

Further, Ovshinsky teaches away from the limitations recited by claims 40 and 41. Claims 40 and 41 recite that "the interface and first regions have substantially the same concentration of the metal." Claim 41 further recites that "the interface region is substantially homogenous." Ovshinsky, however, teaches that Ovshinsky's memory material is compositionally non-homogenous to reduce drift. Accordingly, one of ordinary skill in the art would not have been motivated to modify Ovshinsky as suggested by the Examiner.

Claims 35 and 42 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Ovshinsky in view of Kozicki et al., US Patent No. 5, 761,115 ("Kozicki"). This rejection is respectfully traversed.

Claim 35 recites that "the metal ions comprise Ag," and claim 42 recites that "the second electrode material predominately comprises elemental silver."

As discussed above, Ovshinsky fails to disclose, teach or suggest all limitations of amended independent claim 31. Therefore, for at least the reasons discussed above this rejection should be withdrawn.

Further, it would not have been obvious for one of ordinary skill in the art to combine the teachings of Ovshinsky and Kozicki as suggested by the Examiner. Office Action at 4. Ovshinsky teaches that Ovshinsky's memory material may or may not contain a transition metal. During operation, Ovshinsky's memory material changes phases between an amorphous state and a crystalline state. Kozicki, on the other hand, teaches a programmable metallization cell (PMC) that includes a chalcogenide material and a Group I or Group II metal. Kozicki teaches that the PMC switches from a high resistance state to a low resistance state when a metal dendrite grows from a cathode upon application of a voltage. Therefore, Kozicki's PMC requires the Group I or Group II metal for operation.

Neither Ovshinsky nor Kozicki teach or suggest using silver in place of a transition metal in Ovshinsky's memory material. As is known in the art, transition metals have different properties than Group I and Group II metals. Further, the principles upon which Ovshinsky's memory operates, as taught by Ovshinsky, are not equivalent to the operation of the PMC, as taught by Kozicki.

Claims 31-42 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-59 of copending Application No. 10/230,201 to Campbell et al. Application No. 10/230,201 was allowed on July 28, 2004. Applicants have filed a terminal disclaimer complying

Application No.: 10/736,617
Amendment dated September 7, 2004
Reply to Office action dated June 7, 2004

Docket No.: M4065.0698/P698-A

with 37 C.F.R. § 1.321(c) concurrently with this Amendment. Accordingly, withdrawal of this rejection is respectfully requested.

Claims 31-42 are also provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 79-96 of copending Application No. 10/225,190 to Campbell et al. Application No. 10/225,190 is still pending as of the date of the filing of this Amendment. Since this is only a provisional rejection, no response is required at this time.

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to pass this application to issue.

Dated: September 7, 2004

Respectfully submitted,

By 

Thomas J. D'Amico

Registration No.: 28,371

Elizabeth Parsons

Registration No.: 52,499

DICKSTEIN SHAPIRO MORIN &
OSHINSKY LLP

2101 L Street NW
Washington, DC 20037-1526
(202) 785-9700
Attorneys for Applicants